REMARKS/ARGUMENTS

STATUS OF APPLICATION

Claims 1-23 are pending in the application. Claims 15-18 were previously canceled pursuant to a restriction requirement. Claims 7, 10 and 21 have been canceled. Claims 1-3, 6, 8, 9, 11, 19, and 22 have been amended and claims 24-25 have been added to more distinctly claim the invention. Support for the new and amended claims can be found in the specification and the drawings. No new matter has been added.

CLAIM AMENDMENT

To more distinctly claim the invention, Applicants have amended claims 1, 6, and 9, to recite, "... annealing the trench using hydrogen gas in the absence of oxygen gas." Claim 19 has been amended to recite, "... annealing the at least one trench using hydrogen gas in the absence of oxygen gas ...." Support for these limitations can be found in the specification on page 7, lines 3-5 ("Preferably, the anneal is performed using hydrogen gas ...."), page 7, lines 5-6 ("Use of hydrogen gas reduces the oxygen of the native oxide layer formed on the walls of the trench." Emphasis is added.), and step 228 in Fig. 1 ("Perform Hydrogen Anneal"). Applicants further submit a person of ordinary skill in the art would understand that the annealing, as described in the specification, is performed "in the absence of oxygen gas" otherwise the stated objective of reducing the oxygen of the native oxide layer cannot be achieved. It is well known in the art that the presence of oxygen gas (e.g., as in dry or wet thermal oxidation) promotes growth of oxide not reduce "the oxygen of the native oxide layer" (page 7, lines 5-6). Therefore, the limitation "in the absence of oxygen gas" is an inherent theory or advantage, and is supported in the original description under at least MPEP 2163.07(a).

CLAIM REJECTIONS

Claims 1-14

Claims 1-14 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,100,132 to Sato et al ("Sato"). This rejection is respectfully traversed.

Applicants direct Examiner's attention to the §131 declaration filed by the Applicants on June 4, 2003 showing the step of "annealing the trench so that trench corners at the open and closed ends of the trench become rounded" was reduced to practice prior to the June 29, 1998 filing date of Sato. Thus, withdrawal of this rejection is respectfully requested.

Claims 19-20 and 23

Claims 19-20 and 23 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 5,915,180 to Hara et al ("Hara"). This rejection is respectfully traversed.

Claim 19 as amended distinguishes over Hara at least by reciting "annealing the at least one trench using hydrogen gas in the absence of oxygen gas to: ... (2) reduce oxygen of a native oxide layer on the walls of the at least one trench". In contrast, Hara uses thermal oxidation to form an oxide layer (see column 7, lines 39-45). Thus, Hara uses oxygen and as such teaches away from "annealing the at least one trench using hydrogen gas in the absence of oxygen gas" as recited in Applicants' claim 19. Further, thermal oxidation promotes growth of oxide, not "reduce oxygen of a native oxide layer on the walls of the at least one trench" as recited in Applicants' claim 19. Thus, claim 19 and its dependent claims 20 and 23-24 distinguish over Hara at least for the above reasons.

Claims 19-23

Claims 19-23 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,133,587 to Takeuchi et al ("Takeuchi"). This rejection is respectfully traversed.

Claim 19 as amended distinguishes over Takeuchi at least by reciting "annealing the at least one trench using hydrogen gas in the absence of oxygen gas to: ... (2) reduce oxygen of a native oxide layer on the walls of the at least one trench". Takeuchi uses wet thermal oxidation to form an oxide layer. Takeuchi in column 7, lines 55-58 states: "... hydrogen (H2) and oxygen (O2) were admitted at a ratio of 4:3, the hydrogen and oxygen were burned to

produce water vapor, and a thermal oxide film was formed by the water vapor and oxygen." Emphasis is added. Thus, similar to Hara, Takeuchi uses oxygen and as such teaches away from "annealing the at least one trench using hydrogen gas in the absence of oxygen gas" as recited in Applicants' claim 19. Therefore, claim 19 and its dependent claims 20-24 distinguish over Takeuchi at least for the above reasons.

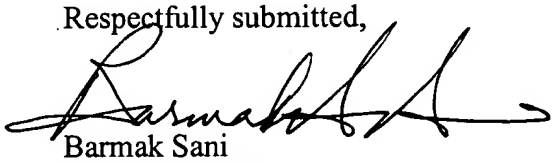
New independent claim 25 corresponds to claim 22 prior to the present amendment. None of the cited references taken singly or in combination teaches or suggests "annealing the trench to: (1) reduce the number of defects in the trench created during the step of forming, and (2) round corners at the open and closed ends of the trench, wherein the step of annealing is performed using hydrogen gas within a temperature range of about 960 to 1160°C and within a pressure range of about 40 to 240 Torr." Accordingly allowance of new claim 25 is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all pending and newly presented claims are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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